

OFFICE ERGONOMICS

**ASC Command Surgeon's
Office**

AMSAS-SG

DSN 793-2702



ASC - On The Line



Ergonomics

- **Ergonomics is the study of people in relation to their work place**
- **Improves the interaction between humans and the machines they use for work**
- **Advantages:**
 - Reduces injuries
 - Improves quality of life in the workplace
 - Improvements are often not expensive



Purpose - Office Ergonomics

- **What we will cover:**
 - How to setup comfortable workstation – using a step-by-step guide
 - Determine what office equipment is best to meet the needs of different individuals
 - Identify ways to reduce WMSD* risk

**WMSD: work-related musculoskeletal disease*



Office Ergonomics

- **What's the problem with sitting all day?**
- **Which WMSD risk factors exist in an office setting?**





Office Ergonomic Risk Factors

Stressors in the Office

- **Highly repetitive motions with little recovery time**
- **Awkward postures (hands, arms, wrists, neck, shoulder, legs)**
- **Static muscle loading**
- **Visual/Mental demands - constant attention, stress**
- **Contact stress (thighs, arms, palms)**



Office Locations or Similar Activities

- **How many computers do you interact with? (office, home, and travel)**
- **Like activities (i.e., video games, musical instruments, hobbies)**





Poor Office Ergonomics

Assessment Indicators

- **Employee is wearing wrist splints**
- **Home-made modifications are observed**
- **Mouse not on the same level as the keyboard**
- **Reaching for the mouse**
- **Elbow's are not at 90 degrees, wrists are deviated**
- **Employee is leaning forward**



Poor Office Ergonomics

Assessment Indicators (continued)

- **Employee looks uncomfortable**
- **Employee's feet are not supported**
- **Employee's legs do not fit under the desk**
- **Employee's knees are touching the keyboard tray**
- **Employee's shoulders are hunched up**



Creating the Ideal Workstation:

A Step-by-Step Guide

- **A DoD Ergonomics Working Group Plan to include:**
 - **Illustrated guidelines on how to adjust workstation**
 - **Information on how to organize work area and tasks**
 - **Checklists to evaluate a workstation**
 - **Specification lists when purchasing new equipment**



Creating the Ideal Workstation:

A Step-by-Step Guide

- 1. Work Area**
- 2. Desk**
- 3. Chair - seat**
- 4. Chair -
backrest**
- 5. Footrest**
- 6. Monitor**
- 7. Keyboard**
- 8. Mouse**
- 9. Other input
devices**
- 10. Document
holder**
- 11. Lighting**
- 12. Glare**
- 13. Radiation**



1. The Work Area

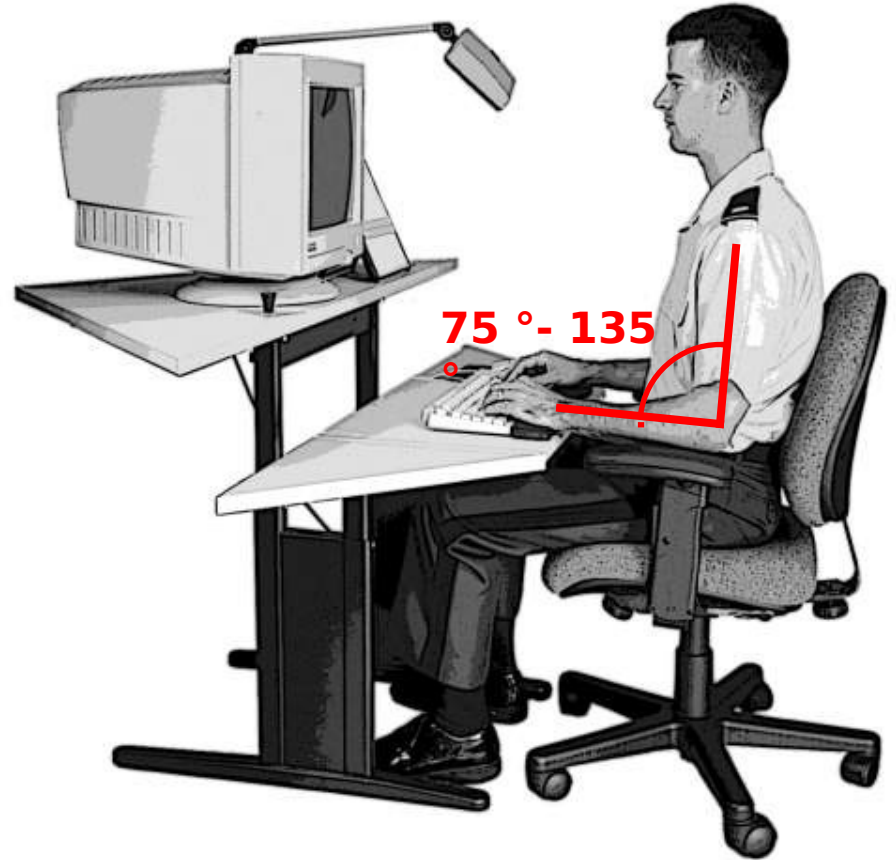


- Enough space to perform all tasks
- Allows you to place items you use most directly in front of you
- Comfortable room temperature



2. The Desk

- Your shoulders are relaxed
- Your upper arms are close to your body
- The angle between upper arm and forearm is $75^{\circ} - 135^{\circ}$

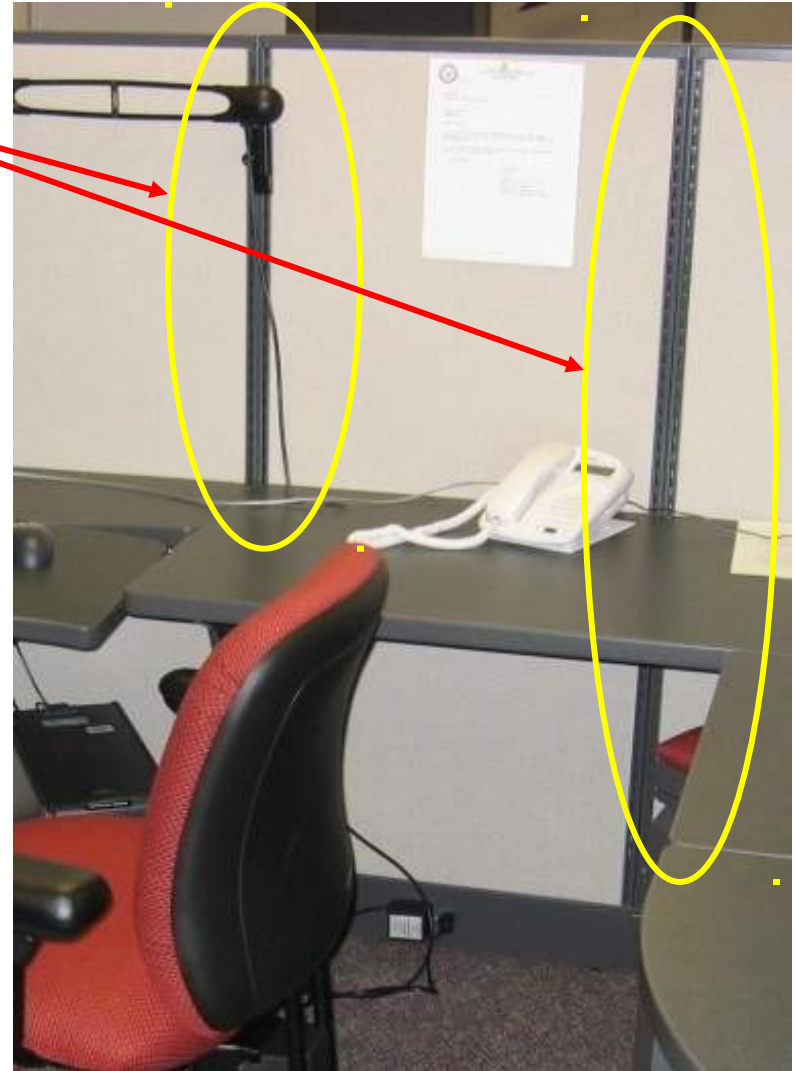




2. The Desk

Adjustable Surface

- ☒ **Adjustable surface**
- ☒ **Desktop is a matte finish**
- ☐ **Adjustable keyboard tray**
 - ☐ 22" to 28" from the floor
- ☐ **Acceptable under-desk clearance**
 - ☐ 17" for knees
 - ☐ 23½" for feet
 - ☐ 20" minimum width





2. The Desk

Adjustable Keyboard Tray

- **Adjustable surface**
- **Desktop is a matte finish**
- **Adjustable keyboard tray**
 - 22" to 28" from the floor
- **Acceptable under-desk clearance**
 - 17" for knees
 - 23½" for feet
 - 20" minimum width

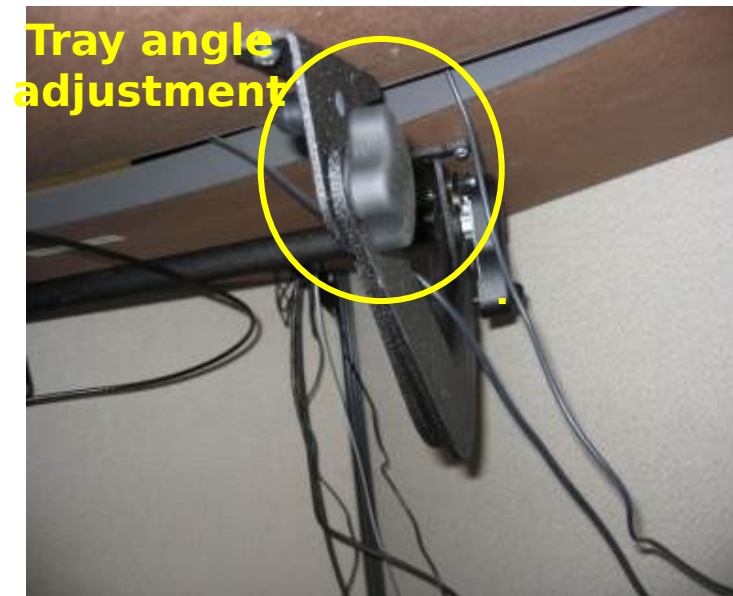




2. The Desk

Adjustable Keyboard Tray

- **Adjustable surface**
- **Desktop is a matte finish**
- **Adjustable keyboard tray**
 - 22" to 28" from the floor
- **Acceptable under-desk clearance**
 - 17" for knees
 - 23½" for feet
 - 20" minimum width

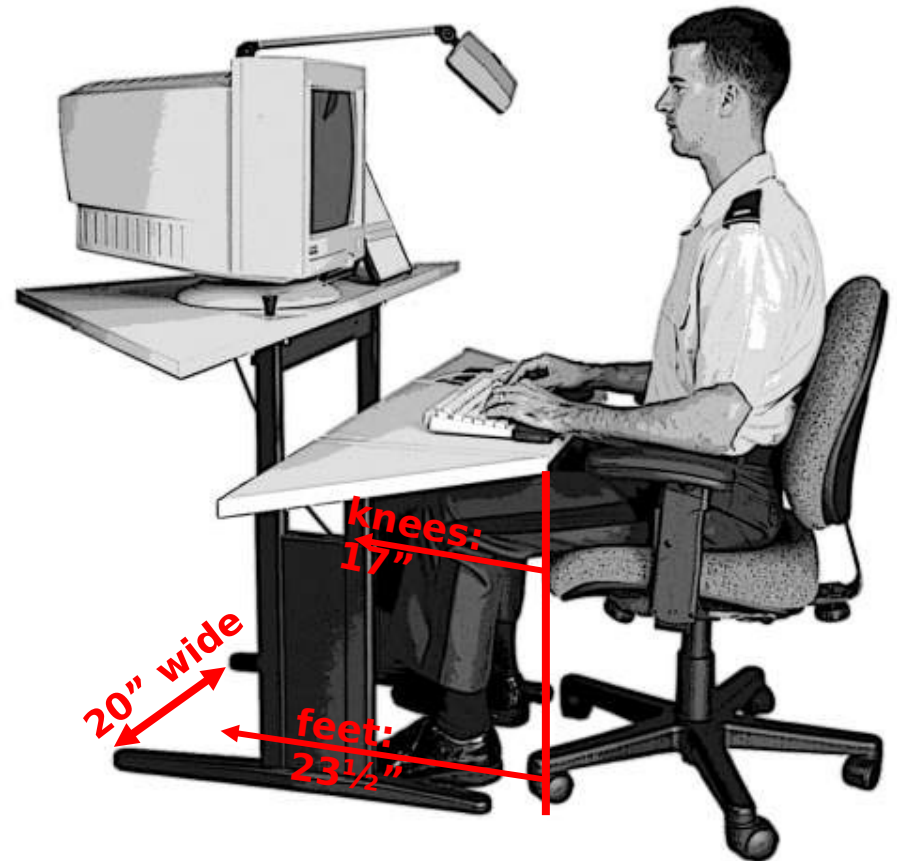




2. The Desk

Under-desk Clearance

- Adjustable surface
- Desktop is a matte finish
- Adjustable keyboard tray
 - 22" to 28" from the floor
- Acceptable under-desk clearance
 - 17" for knees
 - 23½" for feet
 - 20" minimum width





3. The Chair

- ☒ Easily adjustable (with one hand)
- ☐ Controls are easily reached
 - ☒ Seat height
 - ☒ Seat pan length
 - ☒ Seat pan slope
 - ☒ Backrest
 - ☐ Armrest
- ☒ Provide immediate feedback
- ☐ Operation of the controls are logical and consistent





3. The Chair - Seat

- **Adjustable desk**
 - Feet are flat on the floor
 - Back is supported
 - Then adjust your desk
- **Non-adjustable desk**
 - Adjust your chair to comfort
 - Feet may not touch floor – then add foot rest
- **Ideal Seat height**
 - Crease behind knee is slightly above the seat
 - Minimum adjustment: 16" to 20½"





3. The Chair - Seat

■ **Seat Pan Length**

- Length = 15" to 17"
- With your back against the seat, the front edge of seat pan should not touch the crease of knee

■ **Seat Pan - too short**

- Inadequate thigh support
- Leads to whole body discomfort

■ **Seat Pan - too long**

- Longer than buttock-knee length leads to leg discomfort
- Forces you to sit forward away from the backrest





3. The Chair - Seat

Seat Pan Slope

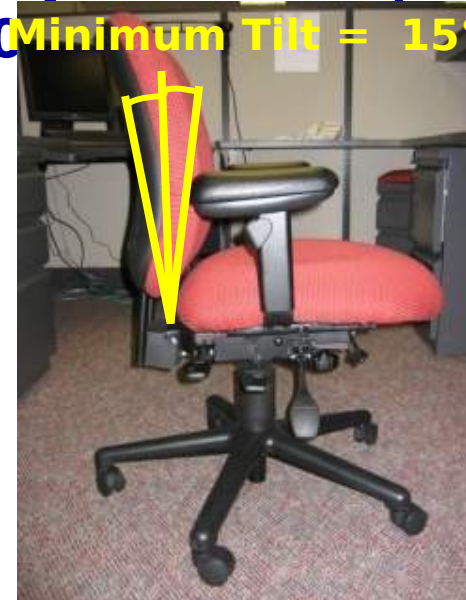
- Adjustable range that allows for 5° of tilt (forward and backward)
- backward)
- Should lock into position





4. The Chair - Backrest

- Surface minimum of 15" high and 12" wide
- Contour to the curve of your lower back
- Large enough to support entire back
- Have a forward and backward tilt (minimum of 15°)
- Extend high enough to support upper trunk, head, and neck when leaning back
- Allows for natural body movements
- Contains a lumbar (lower back) support
- Vertical seat back adjustment (6" to 10")





4. The Chair - Backrest

- **Vertical seat back adjustment**



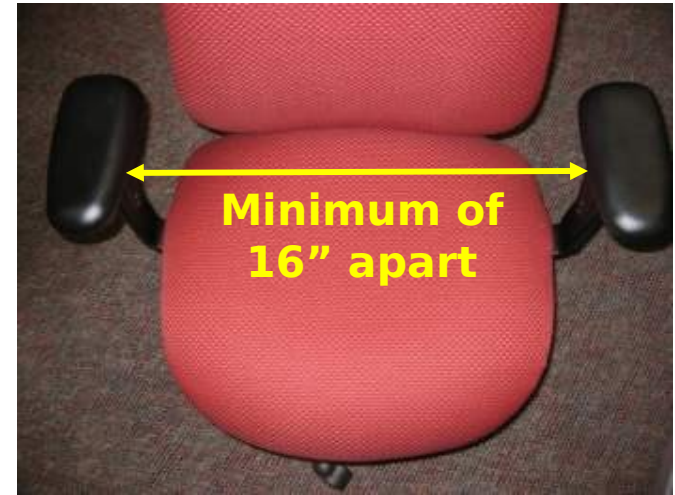
- **Backrest tilt adjustment**





4. The Chair - Armrests

- **Adjustable armrests**
 - Minimum of 16" apart
 - Vertically adjustable to match their height to your elbows at rest
- **Armrest height and desk or keyboard height is the same**
- **Armrests should be:**
 - Long enough to support forearm
 - Wide enough to support forearm
 - Padded and soft
 - Removable





5. The Footrest

- **Needed if your feet do not rest flat with a correctly adjusted chair. It should be**
 - Does not restrict leg movement
 - Easily removed
 - As wide as your hips
 - Large enough for the soles of both feet
 - Has a nonskid surface
- ***Temporary fix: old phone books or binders***





6. The Monitor

- **Images clear & stable**
- **Brightness & contrast controls**
- **Adjustable**
 - Tilts vertically
 - Swivels horizontally
 - If you wear bifocals, lower monitor to avoid neck tilt
- **Monitor position**
 - Gaze slightly down to view center of screen (top of monitor at eye height)
 - 16" minimum from eyes to screen



■ **User preferred viewing distances: 24" to 34"**



7. The Keyboard

- **Choose a keyboard with:**

- ☐ Independent angle adjustment
- ☐ A thin profile to minimize wrist extension
- ☐ A matte-finished surface

- **Adjust keyboard height:**

- ☐ To reduce tension, low enough so arms are relaxed at your sides
- ☐ Angle between upper arm and forearm is 75° - 135°





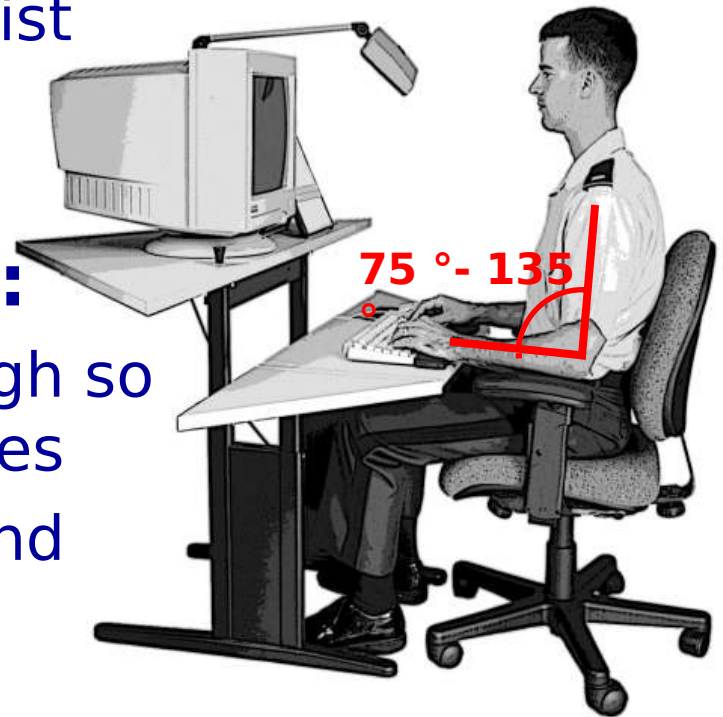
7. The Keyboard

- **Choose a keyboard with:**

- ❑ Independent angle adjustment
- ❑ A thin profile to minimize wrist extension
- ❑ A matte-finished surface

- **Adjust keyboard height:**

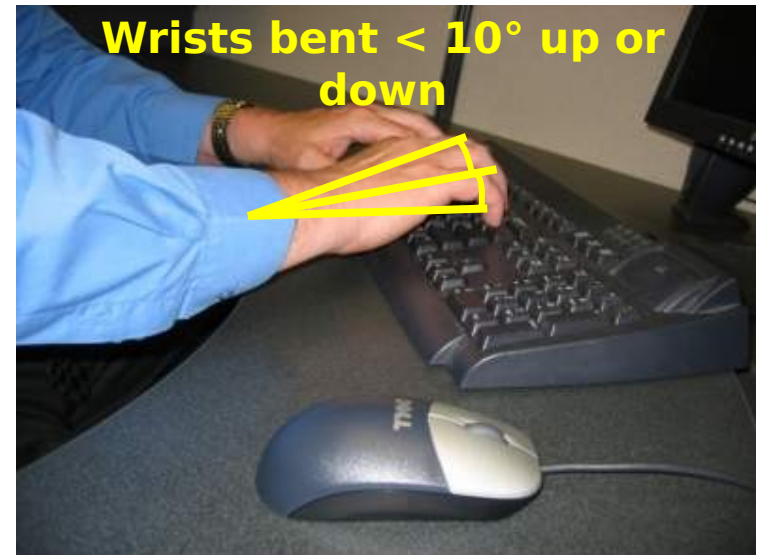
- ❑ To reduce tension, low enough so arms are relaxed at your sides
- ❑ Angle between upper arm and forearm is $75^{\circ} - 135^{\circ}$





7. The Keyboard (continued)

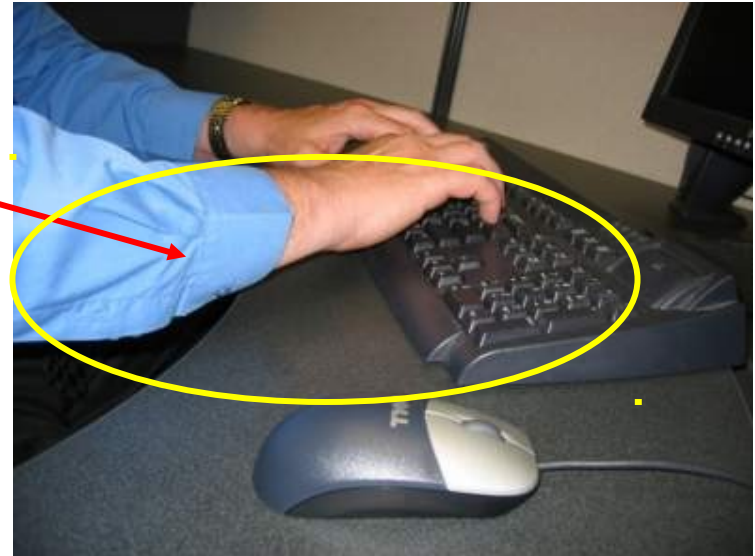
- **Adjust keyboard so that:**
 - ☐ Wrists are bent no more than 5° left or right
 - ☐ Wrists are bent no more than 10° up or down
- **If keyboard is not adjustable or too low, use paper books to raise it up temporarily**
- **If keyboard is too high, raise your chair or place some padding under your wrists to keep them from drooping**





7. The Keyboard

- **Keep your wrist floating, but keep forearms supported on armrests**
- **Wrist and palm rests:**
 - Reminds you to keep your wrist straight or only slightly bent
 -
 - Intended for a wrist rest between typing, *not continually*





8. The Mouse

- Located directly in immediate reach zone

- Shoulders relaxed at side

- Positioned as close to your body as your keyboard

- Housed together with your keyboard on an adjustable work surface or tray





10. The Document Holder

- **Needed if you refer to printed materials often. It should be:**

- Stable
- Easily adjustable (height, position, and angle)
- Placed next to your screen at the same height or between your screen and keyboard



- ***To exercise eyes: place holder at different distance***



Summary

- **Office ergonomic WMSD risk factors exist in the office, home office, and TDY**
- **Potential solutions involve improving posture, reducing repetition, and minimizing duration**



Summary

- **A good office setup/posture:**
 - Eyes are level with top of monitor
 - Neck is not bent
 - Back is slightly reclined/no slouching
 - Shoulders are relaxed
 - Arms are supported
 - Forearm, wrists, hands are straight
 - Mouse is next to the keyboard
 - Knees are slightly higher than the hips
 - Feet are firmly supported



Ergonomic Sites

- **DoD Ergonomics Working Group**
<http://www.ergoworkinggroup.org/>
- **USACHPPM Ergonomics Program**
<http://usachppm.apgea.army.mil/ergopgm/>
- ***Both sites contain:***
DoD Working Group's Creating an Ideal Workstation: A Step-by-Step Guide



Any Questions?



Ergonomics POC

- **ASC Industrial Hygienist**

309-782-2702

DSN 793-2702